DCU
Ollscoil Chathair
Bhaile Átha Cliath
Dublin City University

The FLOURISH Module at DCU:
Use Your Data for Your Wellbeing
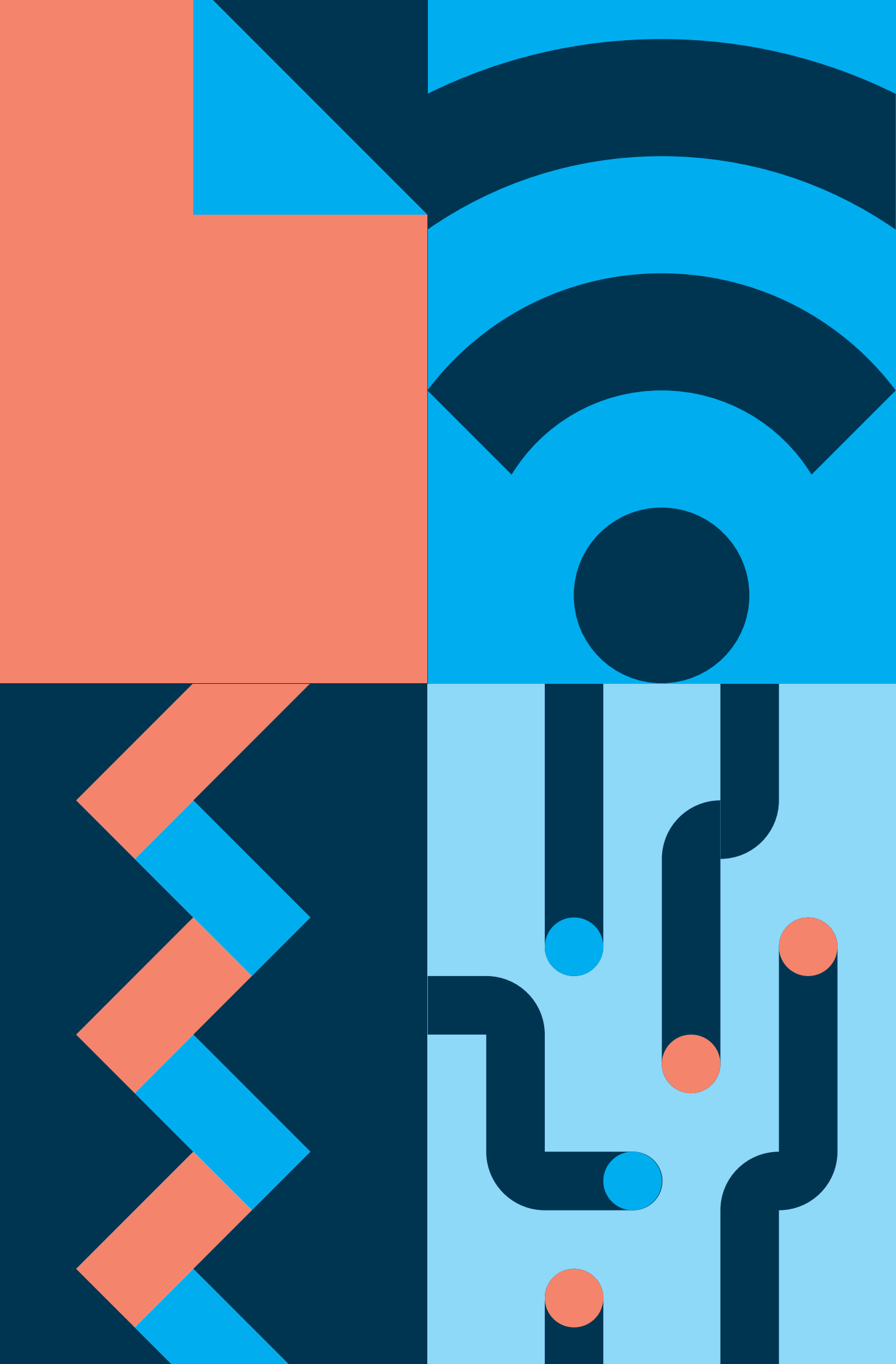
A report on the creation and delivery of a 5-credit module on student wellbeing at Dublin City University during the academic year 2021 to 2022.

Alan F. Smeaton
Dublin City University

May 2022

Insight   fitbit

At DCU, one of our key strategic goals is to offer everyone who enrols with us a "transformative student experience". Naturally, this entails ensuring that we support students in every way possible to attain academic excellence. But, of course, that is just one part of the jigsaw. It is also critically important that we provide the environment and the supports that allow our students to develop and flourish as people.

I am pleased to say that we can point to some success in meeting that objective, as shown in the feedback we receive from employers, who often describe DCU graduates as "rounded and grounded". However, DCU has never been an institution to rest on its laurels. Innovation and agility are in our DNA. We relish the opportunity to respond to new challenges and opportunities in the rapidly changing Higher Education landscape. More often than not this has involved harnessing new tools and emerging technologies.

That ambitious and inventive spirit is entirely evident in FLOURISH. The initiative leverages some of the wide range of subject expertise across our campuses as well as cutting edge DCU research and expertise in the area of data science to provide students with new insights into how their personal habits and lifestyle impact on their overall wellbeing. FLOURISH provides them with digital tools, which can help to develop personal skills, promote health literacy and foster other positive behaviours, and we are very pleased that we can recognise their achievement in completing FLOURISH by awarding a digital badge . The pandemic was a difficult time for all of us, and was particularly hard for our

students who were robbed of many of the key experiences of University life. Amidst the many personal challenges that COVID threw at our students, the benefits of engaging with FLOURISH were amplified. It is clear from the feedback captured in this report that the experience was both informative and empowering for our students, during a challenging time.

 I want to commend Prof Alan Smeaton and his team on the success of FLOURISH thus far. The initiative reflects DCU's 'People First' values, and our focus on supporting students' wellness and personal development, alongside academic excellence. By offering them a structured way to manage their own physical and mental wellbeing, it helps students to learn more about themselves and establish healthy habits for life. This can only benefit their overall university experience.

Prof Dáire Keogh
President, Dublin City University

The idea for a module at the intersection of student wellness and student data which would lead to enhancing our students' health literacy and their data literacy came from work done by a Strategic Planning Working Group in DCU which ran from 2018 to 2019. That group catalogued nearly 900 individual data points that the University gathers on our students and identified that we had been making very little strategic use of this data because it was fragmented. An interesting side effect of that working group was the realisation that our students themselves can and do gather their own personal data and like everyone else, most of them do not use it to any great effect either. That led us to think of ways in which we could teach our students about their data and about how it can be a force for good.

At the same time as this was happening there was a realisation of the importance of student wellness and the realisation that as a University, we need to do more, and that is where FLOURISH comes in. FLOURISH delivers practical tips in the areas that impact students' everyday wellness including sleep, nutrition, work habits, procrastination, relationships with others, physical activity, positive psychology, critical thinking and more. In addition it is also about student data, and how students can use their data for their benefit.

FLOURISH is the result of the work of many people including the wide range of subject experts drawn from across our campuses, the learning technology experts in DCU Studio including Dererca Ní Chianáin, Gráinne Sharkey and Richard Herlihy, the Head of School of Computing Prof Martin Crane, Dean of the Faculty of Engineering and Computing Jennifer Bruton and Associate Dean for Teaching and Learning Dr. Jennifer McManis. We also thank our colleagues

in Registry for guiding us through the accreditation and approval process and Dr. Mairéad Nic Giolla Mhichíl for guiding us through the microcredentials award process.

We are especially grateful to Insight colleagues in UCD Drs. Denise McGrath and Ciara Duignan with whom we shared the early stage research work and gathering of stakeholder feedback on the idea of FLOURISH. We also acknowledge the support of the Insight Centre and Science Foundation Ireland (SFI) under Grant Number SFI/12/RC/2289_P2 for funding support in the development of the module.

Student experience with FLOURISH was greatly enhanced by the provision of smartwatches and other support from Fitbit, for most of the participating students. This allowed them to gather and use their own data on themselves, and for their own benefit,

Professor Alan F. Smeaton
Dublin City University
May 2022

"This (FLOURISH) topic has been an eyeopener to me and I am looking forward to using some of these tips, especially the ones relating to saving money while still eating healthy."

Student Wellness in a University Setting

"Another aspect I really enjoyed was the heart rate, the Fitbit would give me breathing exercises to lower my heart rate if I was stressed."

There is a wealth of literature and interest in student wellness as we have become more aware of the increasing complexity of the challenges our students now face in their everyday lives. While we might like to believe that this is something new and recent, student wellness has been recognised as important for decades, it is just that we haven't done enough to address it until recently. A nationwide survey of University programs in the US which address student wellness identified 202 such programs, and that was 30 years ago, in 1992[1]. At that time most programs focused on physical activity and nutrition as the main pillars of wellness though these days this has broadened to include many other aspects.

Student wellness is often mixed in with the broader topic of health literacy and we sometimes struggle to define each of them, and the differences between them. We know that wellness is something to do with being aware of your own health and being able to access and use whatever health resources are available to you in order to maintain or improve your own health. Unfortunately many students don't yet have the skills or the experience to do this and so they struggle.

In 2019 the Union of Students in Ireland published a National Report on Student Mental Health in Third Level Education which included a survey of over 3,300 students which found that one third of students have clinically relevant levels of stress, anxiety, and depression[2]. In January 2021 DCU Students' Union reported a survey

1,847 DCU students where 81% felt alone more often than not while in lockdown, (only) 60% knew who to turn to if mental health affected their academic performance and 53% found their workload unmanageable[3]. These are just 2 of many reports indicating that this is a major problem.

To address issues of student wellness, courses have started to spring up in the US and in Europe addressing happiness and wellness. The best-known of these is at Yale University where the course on the Science of Happiness by Professor Laurie Santos is Yale's most popular ever course. Its MOOC version on Coursera has had millions of people register where it "reveals misconceptions about happiness, annoying features of the mind that lead us to think the way we do, and the research that can help us change ... ultimately be prepared to successfully incorporate a specific wellness activity into your life."[4]

However, we feel that these courses on wellness, wellbeing, health literacy or happiness, miss an important trick. This generation of University students are data literate, they generate and consume huge amounts of data and information as part of their everyday lives for their social interaction with others, their entertainment, their education. Thus it makes sense that students' personal data should be exploited and used in some way as part of improving student wellness, and that is what we do in FLOURISH.

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[1] Dinger MK, Watts PR, Waigandt A, Whittet C. A Nationwide Survey of College and University Student Wellness Programs. Recreational Sports Journal. 1992;17(1):44-48. doi:10.1123/nirsa.17.1.44
[2] https://usi.ie/mentalhealthreport/
[3] https://tinyurl.com/35mea7mf
[4] https://www.coursera.org/learn/the-science-of-well-being

> "This topic (in FLOURISH) made me really think about the way I should work and take breaks."

Working within the Insight SFI Research Centre for Data Analytics and funded by Science Foundation Ireland, researchers in both DCU and UCD have designed, created and have run taught modules in each University that address student wellness. The respective Universities have adopted different modalities in terms of whether their module is core or optional, open to all students or to a restricted cohort, and delivered entirely online or with in-lab support. The different modalities for delivery means that we can learn which choice worked well and under which circumstances. In both cases, the FLOURISH modules specifically address the question of "can harnessing student data (University and personal) support students to manage their lives, to be well, and to reach their goals?"

With support from Fitbit who provided wearable devices to allow the majority of DCU's student participants to gather and use their own personal data within the module, we are able to address this question directly. In this report we present our findings from the DCU delivery of the FLOURISH module in 2021/2022.

"I found this week's topic (in FLOURISH) to be extremely interesting.
I really enjoyed playing the different games and seeing how the more I did the same game the more I improved."

"Using the new found knowledge I've discovered (from FLOURISH) I hope to be more cautious with my data going forward."

"(As a result of FLOURISH)
I should try to build a better
frame of reference for myself with
regards to the work I do. I should
appreciate the effort I put in
... and learn to take a breather,
 guilt-free."

FLOURISH @ DCU

"That (FLOURISH assignment) was a very interesting experience and it was interesting to see what I am actually putting into my body, do I fuel it with enough good nutrients and what things I need to cut back on. This will help me in the future and allow (me) to improve my diet."

Work on developing FLOURISH started in 2020 with background work carried out by Insight researchers at UCD and DCU. This consisted of interviews, group meetings with students, student leaders, and health experts as well as with subject experts and administrative and operations staff in both Universities. This culminated in a pilot run of FLOURISH at DCU during the second semester of 2020/2021.

FLOURISH in DCU was approved by the Faculty of Engineering and Computing Teaching and Learning Committee in December 2020 as an accredited standalone module. For 2021/2022 it was offered in unaccredited form and not part of any degree program, as a module on Loop, DCU's virtual learning environment. Though it was not part of any particular undergraduate degree program it was offered as an extracurricular activity so students took FLOURISH because they wanted to, not because they needed to or needed to pass the module. FLOURISH is offered to year 2 undergraduate students from all courses and all DCU campuses. It is full-year module available entirely online where a student can gain a recognised digital certification or micro-credential worth 5 credits following its completion, if the student so chooses.

FLOURISH content is online resources plus interview-style videos recorded between the module coordinator and almost 20 subject experts drawn from across the University. The interviews are short-form videos of between 5 and 10 minutes which students find are more enjoyable to view. The videos are captioned for accessibility and have been professionally post-produced by DCU Studio so they mix shots of the expert and the interviewer with other animations and graphics in order to provide engaging content.

The content in FLOURISH covers 10 topics, as decided by the subject experts, and shown below.

Topic 1
What can you learn from your personal data?

Topic 2
What is wellbeing?

Topic 3
 Behaviour Change

Topic 4
Physical Activity: Movement

Topic 5
Nutrition

Topic 6
Sleep

Topic 7
Cognitive Psychology: Ways of Thinking

Topic 8
Wellbeing in work and study

Topic 9
Healthy Habits

Topic 10
What have you learnt?

"I noticed that the increased physical activity (from FLOURISH assignment) made me feel more awake throughout the day and made me fall asleep earlier. I also felt better about myself when I took the time out of my day to exercise."

The topics were released on Loop every 2 weeks, 5 in semester 1 and 5 in semester 2. For module assessment, most of the topics had an assignment where students gathered their own personal data on their sleep, nutrition, exercise, physical activity levels, work habits, and more. For this they either used a wearable device such as one of the wearable smartwatches donated by Fitbit, or some other app. Depending on the topic they used their own personal data to reflect on some aspect of their overall wellness and to learn about themselves. This showed them how changes in their lives are reflected in their own personal data so they got the double benefit of seeing the change in their wellness, and seeing the benefit of personal data when it is used for good. The availability of FLOURISH was advertised through social media and with the support of the DCU Students Union and as a result 169 students registered for the module. Because it is a non-core activity we never intended for all or even for many of the students to complete the assignments and achieve the credits. Right from the start

students were encouraged to dip into the module and to use whatever part or parts of it they wanted, whether it was much or little, whether it was early in the first semester or after semester 2 examinations. Assignment deadlines were guidelines and even during and after semester 2 examinations some students were completing and submitting FLOURISH assignments for assessment.

FLOURISH has strong endorsement and support from across the University, from all Faculties, from the DCU Students' Union, from Student Support and Development, and from Senior Management including the DCU President. The support of Fitbit was also particularly helpful as it enabled 100 students who were in receipt of the Fitbit smartwatches, to take part in the topics for which the Fitbit could be used, including sleep, physical activity, behaviour change and what can be learned from personal data.

FLOURISH Subject Experts

Denise Proudfoot
DCU School of Nursing, Psychotherapy and Community Health

Aisling Bourke
DCU Institute of Education

Conor Henegan
Fitbit

Yseult Freeney
DCU Business School

Cathal Gurrin
Insight Centre for Data Analytics

Brian Slattery
DCU School of Psychology

Lorraine Boran
DCU School of Psychology

Suzanne Stone
DCU Teaching Enhancement Unit

Sarahjane Belton
DCU School of Health and Human Preformance

Mary Rose Sweeney
Head of School
DCU School of Nursing, Psychotherapy and Community Health

Eoin Brown
DCU School of Psychology

Carol Barron
DCU School of Nursing, Psychotherapy and Community Health
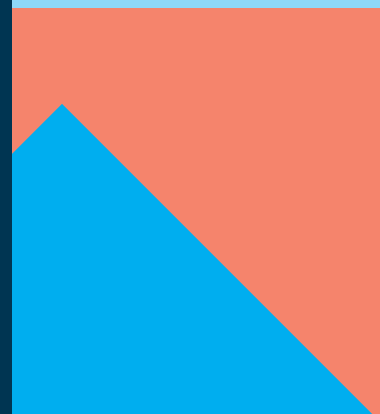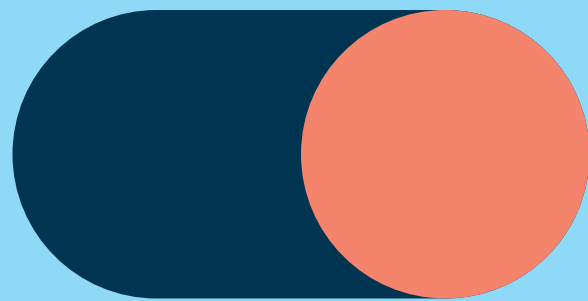
Eileen Gibney
UCD

Claire Timon
DCU School of Nursing, Psychotherapy and Community Health

Caroline Mahon
DCU Health Promotion Coordinator

Mark Philbin
DCU School of Nursing, Psychotherapy and Community Health
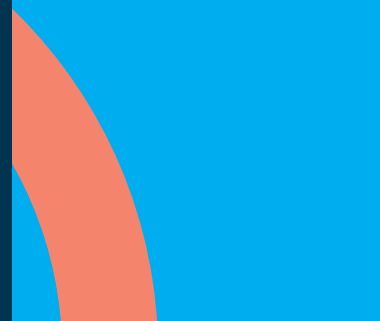
Student Use of FLOURISH

At the end of the second semester in DCU when all students had completed their examinations and the deadline for submitting assignments for FLOURISH had expired, we were able to use the access log files from Loop to analyse student use of FLOURISH's online resources. This is possible because Loop records every interaction with the online content by every student.

We first examined which of the 10 topics attracted most/least attention from students. In total there are 73 online resources for the 10 topics on Loop, in addition to other resources such as a noticeboard and online forum and standard University resources on plagiarism and support as well as a module descriptor. Excluding these, the remaining student access are shown in the Figure below.
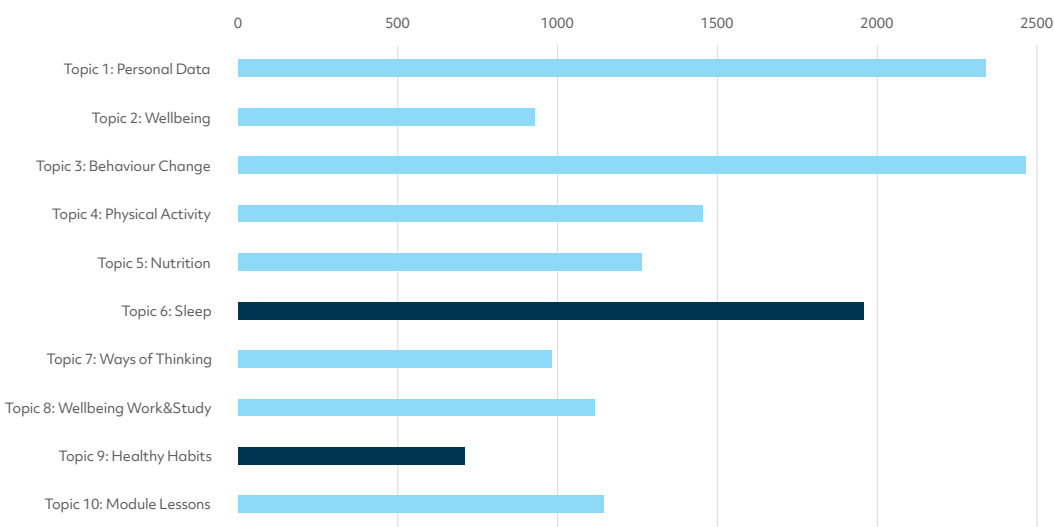

This shows the topics from top down in order of their release to students throughout the academic year. With an average of more than 1,400 student accesses per topic, as expected the earlier topics, 1 and 3 especially, attracted most attention because of student enthusiasm which naturally would wane as the year progressed. The standout entries are Topic 6 on sleep, which attracted more interest than would have been expected at that stage of the year and Topic 9 on Healthy Habits which attracted less.

We then looked at the number of students who submitted assignments for each topic (only 8 of 10 topics had assignments) and as shown in the Figure below, there is a similar higher than expected interest in the sleep topic. These graphs indicate that sleep is definitely a topic students choose to learn more about.


Assignments Submitted for each Topic
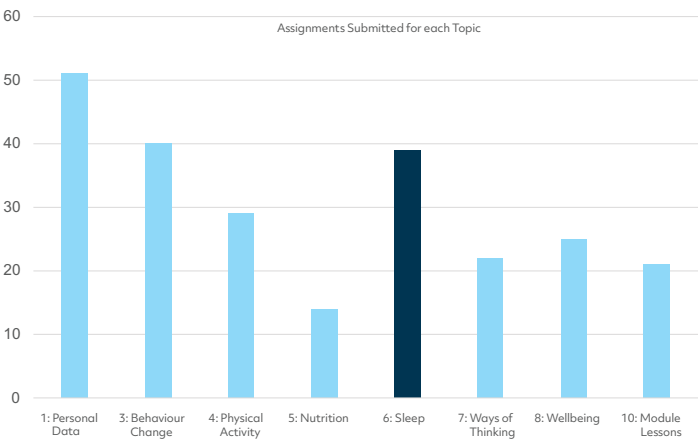
Our final analysis of student usage looked at the cumulative distribution of student access to the 73 online resources directly related to the topic contents, excluding DCU staff access to those resources. This is shown in the figure below illustrating that of the 169 students shown on the x-axis, some had a very high number of access to resources (over 700 in one case), while others had much less. Given there are 73 unique resources covering all 10 topics, the cutoff point is reached at approximately 70 students illustrated in the diagram, meaning that 70 students accessed enough material to cover all 10 topics, if their accesses were unique with no repeats.
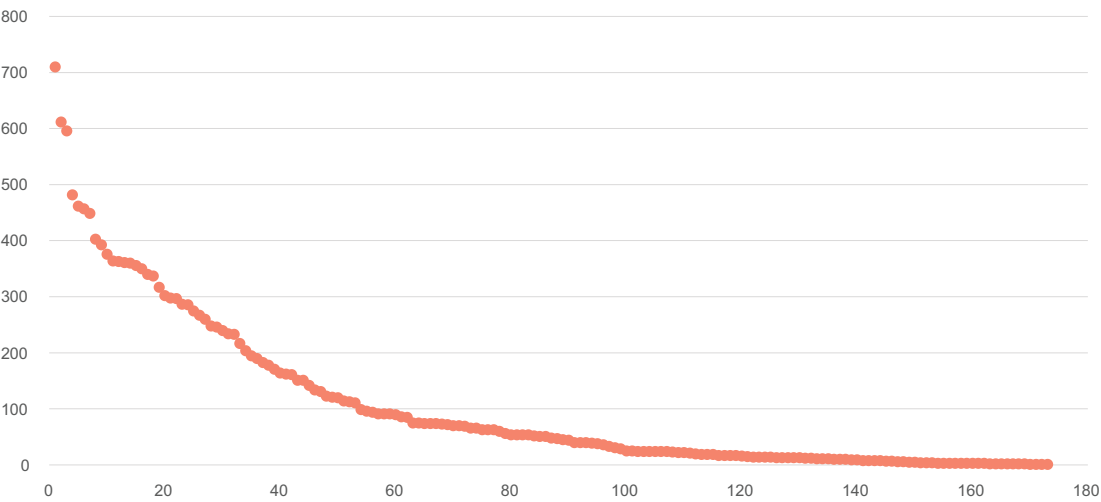
For the 104 students who had a low number of access and where each accessed less than the full set of online resources, their cumulative access is shown below.

Given that the threshold for engaging with one topic is accessing (at least) 7 or 8 topics, the graph shows that approximately 147 students from 169 registered, engaged with at least 1 topic fully.
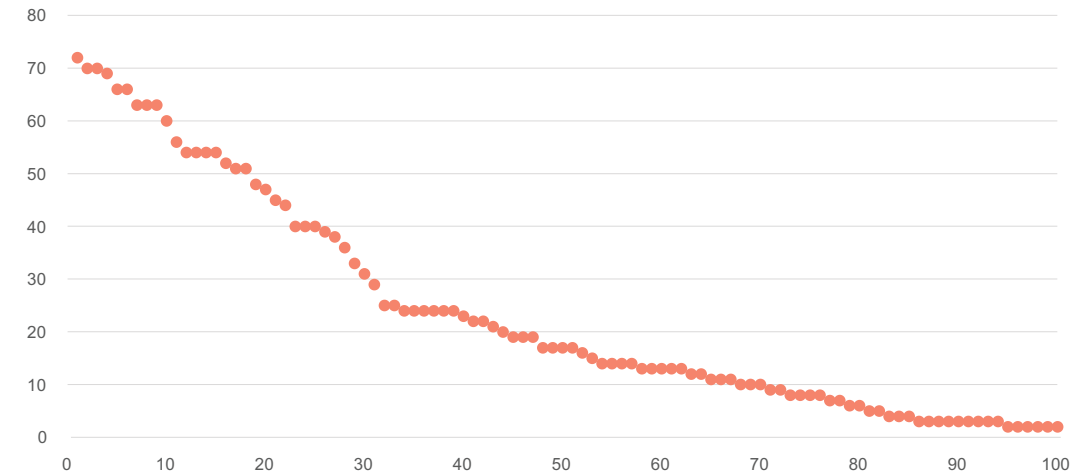
"I'm curious to see how the usage of data will evolve over the course of my lifetime but I will be sure to reduce how much I give to strangers now that I know how much power it gives to them."
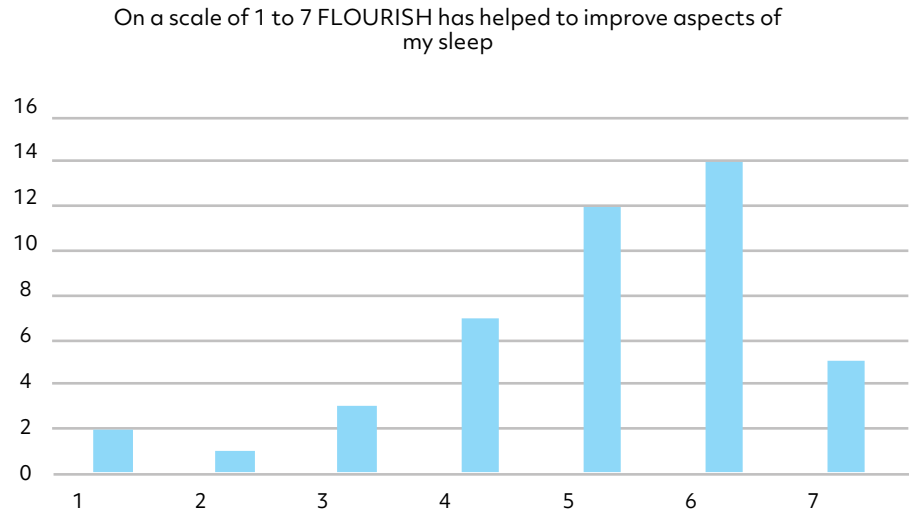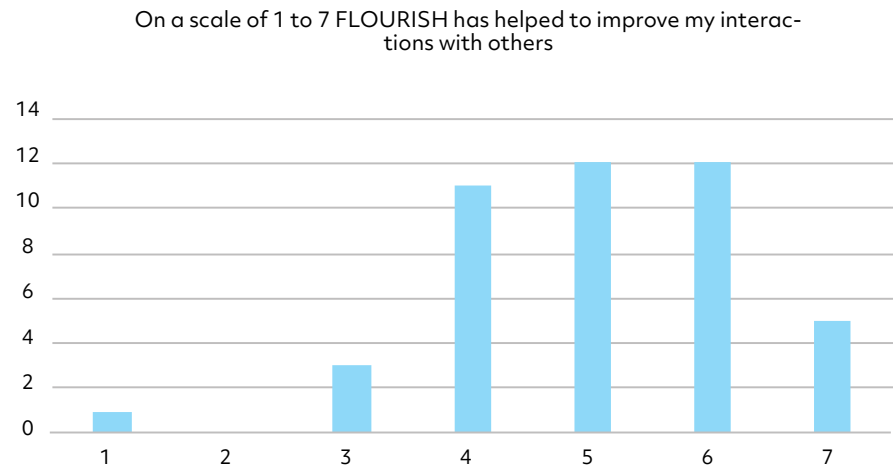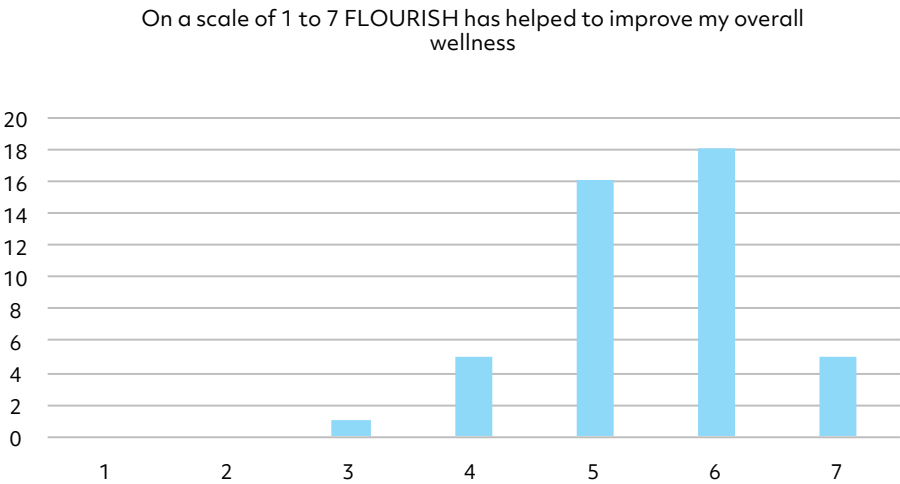
"I noticed that the increased physical activity (from FLOURISH assignment) made me feel more awake throughout the day and made me fall asleep earlier. I also felt better about myself when I took the time out of my day to exercise."
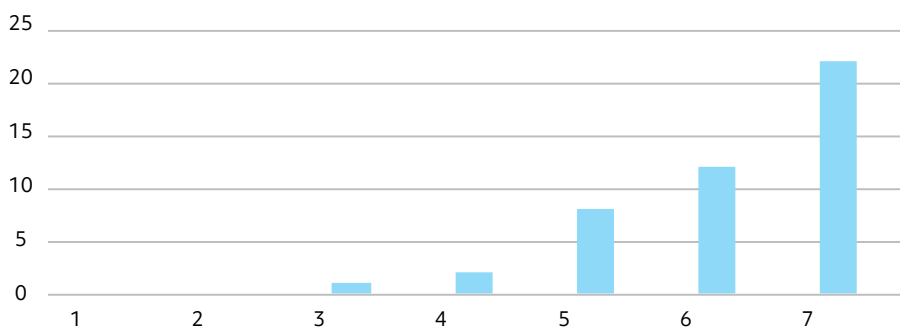
FLOURISH:
What The Students Said

As the FLOURISH module ended at DCU, we conducted an anonymous survey among students and received 45 responses. The survey results are shown below

On a scale of 1 to 7 FLOURISH has helped to improve my overall wellness

On a scale of 1 to 7 FLOURISH has helped to improve my interactions with others

On a scale of 1 to 7 FLOURISH has helped to improve aspects of my sleep

On a scale of 1 to 7 FLOURISH has changed my understanding of my personal date so I can make more informed decisions about my overall wellness

On a scale of 1 to 7 FLOURISH has helped to improve aspects of my nutrition
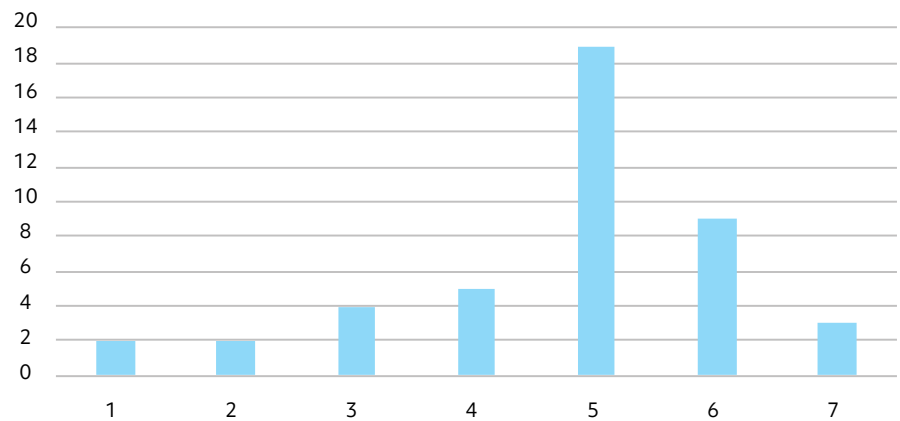
While it is true that the sample of students who responded to the survey is self-selecting, the responses to these 5 questions are an overwhelmingly strong endorsement of the impact FLOURISH has had on these students. In particular, the student responses to the questions about nutrition and about sleep are very encouraging, and the response to the question about personal data is particularly striking with almost half of the responses giving a maximum score to that question.

In addition to the quantitative feedback from the anonymous survey, students were invited to contribute a comment about their view of the FLOURISH module and these are shown throughout this report.

Finally, when asked whether they would recommend that a student in year 2 in the following year should take the FLOURISH module, 44 out of 45 students responded yes.

The Future for FLOURISH

"Over the course of FLOURISH, I became aware of just how much information is available about me online … I was shocked."

The FLOURISH module at DCU has attracted interest from students keen to learn from it, from the National Forum for Teaching and Learning so that others could learn about it, and from industry through the support from Fitbit. FLOURISH has also had great support from within Dublin City University. Interest has also been shown from colleagues in Universities elsewhere including University College Cork, NUI Galway and Ulster University, in running their own versions of FLOURISH or similar.

Apart from trying to improve the lives of our students, we set out to see whether harnessing student data, both University data and personal data, could support students to manage their lives, to be well, and perhaps to reach their goals. Each of the 10 topics included in the module has some element of student data which students use themselves for their own benefit, whether it is learning about their own sleep, nutrition, physical activity, behaviour change, their digital footprint, and more. Judging from the feedback from students, both quantitative and qualitative, we can see that this goal has been achieved.

Personal data has a bad reputation because when we hear about personal data it is almost always some breach of regulations, some leak of data or some abuse of personal data. But personal data can be a force for good if it is not misused or abused and students in FLOURISH have been able to see this firsthand. While FLOURISH is about student wellness and health literacy, it also brings a bonus of improving students' digital literacy, specifically the awareness of personal data and its potential for good. Both of these are 21st century skills heretofore not formally taught to students but learned from peers or from social media, and that is not a good place to learn life skills.

FLOURISH now has momentum that it will run again in 2022/2023 and will likely be larger in terms of student participation given the endorsements from the students from the class of 2021/2022. It is likely that similar courses which include student wellness or wellbeing will appear in the curriculum in other Universities in Ireland, either as extracurricular or core course content. The DCU Futures programme, funded under the Government's Human Capital Initiative, and itself a hugely significant initiative focused on re-imagining undergraduate education for the 21st century, includes an explicit commitment to developing students' transversal skills. In combination, these skills aim to develop students' personal agency in an impactful manner, and two of the key transversal skills to which DCU has formally committed are Health Literacy and Data Literacy. Both of these align strongly with the ethos and aim of FLOURISH and we see significant opportunity for collaboration in this regard.

FLOURISH has also received some recognition having been shortlisted as a finalist in the Education Awards 2022 in the category of Best Student Experience and this helps to highlight both its presence, and its importance.

Finally, while FLOURISH was aimed at DCU's undergraduate students in their second year of studies, it could also be used for University staff or for employees in industry, with the added attraction of an accreditation for completion of the module with possibilities for microcredential awards. The content and the delivery mechanism and the delivery style which leverages the great expertise within DCU's staff, can all be easily repurposed for delivery to other target audiences.

"The (FLOURISH assignment) has given me a new perspective on the balance between my studies and life."